Name	AP Chemist	ry		
_	Due 1/21/20 Complete both free respearly label all final answers	onse questions. Ne	ither will b	e graded. Show all
Using principles of at	omic and molecular structure and the information	n in the table to the	Atom	First Ionization Energ
right, answer the follo	wing questions about atomic fluorine, oxygen, a		F	( <b>kJ mol<sup>-1</sup>)</b> 1,681.0
some of their compou	ids.  for the ionization of atomic fluorine that requir	es 1 681 0 kT mol <sup>-1</sup>	0	1,313.9
(b) Account for the fa that of atomic oxygen	et that the first ionization energy of atomic fluor (You must discuss both atoms in your response et first ionization energy of atomic xenon is great	rine is greater than e.)	Xe xel to the first	?
atomic fluorine. Justif (d) Xenon can react w	y your prediction. ith oxygen and fluorine to form compounds suc	_		
(i) The geom	Lewis electron-dot diagrams you drew for part etric shape of the XeO <sub>3</sub> molecule		g:	
	dization of the valence orbitals of xenon in XeI XeO <sub>3</sub> molecule is polar or nonpolar. Justify yo			
(-)	,, , -	ar Feetings		
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2. Using principles of chemical bonding and molecular geometry, explain each of the following observations.

Lewis electron-dot diagrams and sketches of molecules may be helpful as part of your explanations. For each observation, your answer must include references to all substances.  (a) The bonds in nitrite ion, NO <sub>2</sub> <sup>-</sup> , are shorter than the bonds in nitrate ion, NO <sub>3</sub> <sup>-</sup> .  (b) HClO <sub>3</sub> is a stronger acid than HClO.
<ul> <li>(c) The atoms in a C<sub>2</sub>H<sub>4</sub> molecule are located in a single plane, whereas those in a C<sub>2</sub>H<sub>6</sub> molecule are not.</li> <li>(d) The shape of a PF<sub>5</sub> molecule differs from that of an IF<sub>5</sub> molecule.</li> <li>(e) What is the expected trend in the melting points of the compounds LiF, NaCl, KBr, and CsI? Explain this trend using bondin principles.</li> </ul>